

REMARKS

Specification

The specification has been amended to claim priority from U.S. Patent No. 6,370, 245 which is a continuation-in-part of application No. 08/801,525, filed on Feb. 18, 1997, now U.S. Patent No. 5,907,538.

Claims

Claims 1, 2 and 13 are rejected under 35 U.S.C. 102(b) as being anticipated by Guan et al. (U.S. 5,099,519). Claims 3, 4, 12, 14 and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Guan et al. (U.S. 5,099,519) in view of Morrill et al. (U.S. 6,175,633). Claims 5-7, 16 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Guan et al. (U.S. 5,099,519) in view of Ford (U.S. 5,118,309). Claims 8, 9, 15 and 18-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Guan et al. (U.S. 5,099,519) in view of Lazarus et al. (U.S. 4,280,018). Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Guan et al. (U.S. 5,099,519) in view of Lazarus et al. (U.S. 4,280,018), and further in view of Morrill et al. (U.S. 6,175,633). Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Guan et al. in view of Kruger (U.S. 5,692,059).

The claims have been amended to further clarify the patentable subject matter of the invention. Claim 12 has been cancelled. Claims 1-11 and 13-21 remain in the case for reconsideration. No new subject matter has been added. Reconsideration is requested.

The application now claims priority back to U.S. Patent No. 5,907,538, filed on Feb. 18, 1997. The Feb. 18, 1997 filing date precedes the filing date of Morrill. Therefore, the rejections of claims 3, 4, 12, 14 and 21 under 35 U.S.C. 103(a) as being unpatentable over Guan et al. (U.S. 5,099,519) in view of Morrill et al. (U.S. 6,175,633) are no longer proper.

Claims 1 and 13 have been amended to specify two earpieces that are insertable into ear canals of a user that are held together with a headband. One of the insertable earpieces contains a microphone and the other earpiece contains a speaker. None of the prior art show a headset as specified in claims 1 and 13.

Claims 2, 3, 14 and 15 have been amended to specify an acoustical isolator that suspends the microphone inside the first ear piece away from inside walls of the first ear piece. The acoustical isolator isolates vibrations in the first ear piece caused from bone conduction from the microphone.

The sound-absorbing material 27 shown in FIG. 1 of Guan does not suspend the microphone 30 away from the inside walls of the first ear piece 26. Conversely, the sound-absorbing material 27 only surrounds the peripheral edge surface of the microphone. The ear

pieces in Guan do not insert inside ear canals. Thus, the ear pieces in Guan would not experience the bone conduction vibrations experienced by an ear piece insertable inside an ear canal. Therefore, the sound-absorbing material 27 in Guan does not isolate bone conduction vibrations in the first ear piece from the microphone 30.

Claim 10 specifies a filter including an inductor and a capacitor coupled in series across the terminals of a transistor. Claim 11 specifies a circuit for filtering out noise associated with bone conduction. Claim 15 specifies an electronic filter that is used in combination with a foam material to filter out bone conduction noise.

The circuitry shown in Lazarus and Morrill does not show an inductor and capacitor coupled in series across the two transistor terminals as specified in claim 10. The circuitry shown in Lazarus and Morrill does not suggest a circuit for filtering out noise caused by bone conduction as specified in claim 11. And neither Lazarus or Morrill shows an electronic filter used in combination with a foam material for filtering out bone conduction noise as specified in claim 15.

Finally, none of the prior art show a combination microphone/earphone headset that uses the disc shaped earpiece specified in claim 6 or the nipple shaped earpiece specified in claim 7.

CONCLUSION

For the foregoing reasons, reconsideration and allowance of claims 1-11 and 13-21 of the application as amended is solicited. The Examiner is encouraged to telephone the undersigned at (503) 222-3613 if it appears that an interview would be helpful in advancing the case.



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PATENT TRADEMARK OFFICE

Respectfully submitted,

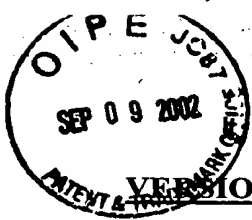
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VERSION WITH MARKINGS TO SHOW CHANGES MADE

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In the specification:

Please add the following paragraph after the title of the invention:

This application is a continuation-in-part of U.S. Serial No. 08/989,816, filed December 12, 1997, now U.S. Patent No. 6,370,245, which is a continuation-in-part of U.S. Serial No. 08/801,525, filed February 18, 1997, now U.S. Patent No. 5,907,538.

In the claims:

1. A full duplex audio headset, comprising:

a first ear piece [having] including a rigid housing for coupling to a headband, the ear piece also including an insertion portion for inserting inside a first ear canal and containing a microphone configured to pickup voice signals of a headset operator output from an ear canal and convert the voice signals into electrical transmit signals and output the electrical transmit signals from the headset as an electrical representation of the voice signals of the headset operator; and

a second ear piece [having] including a rigid housing for coupling to the headband, the ear piece also including an insertion portion for inserting inside a second ear canal and containing an ear phone for converting electrical receive signals received from an external device coupled to the audio headset into audio output sounds and outputting the audio output sounds into the same or a different ear canal of the headset operator so that the headset operator can hear the audio output sounds.

2. An audio headset according to claim 1 including an acoustical isolator [positioned within the first ear piece for substantially isolating the microphone from audio signals attributed to bone conduction, the acoustical isolator comprising a piece of material extending inside the first ear piece and suspending the microphone inside the first ear piece] substantially isolating bone conduction vibrations absorbed by the housing from the microphone contained inside the housing by suspending the microphone inside the first ear piece away from walls of the rigid housing.

3. An audio headset according to claim [2] 1 wherein the acoustical isolator comprises a foam [, paper, plastic, wood, or fiber] material, the acoustical isolator having sides extending against rigid inside walls of the [first ear piece] rigid housing and a center

portion [surrounding sides of] holding the microphone away from the inside walls of the housing.

6. An audio headset according to claim [5 wherein the first, second and third wires are contained within a single flexible cord] 1 wherein the first and second ear piece each comprise circular disc portions with flat faces that rest inside the ear canals, neck portions that connect the disc portions to headset frames, and a headband that connect to the headset frames, the microphone and ear phone located in the circular disc portions.

7. An audio headset according to claim [5 wherein the first connection, second connection and the ground connection each comprise separate connections on a plug connector] 1 wherein the first and second ear piece each comprise a nipple having a cone-shaped stalk portion that connects to an ear piece housing and an umbrella-shaped shroud made of a flexible material that extends from the stalk portion and conforms to a shape of the ear canal, the microphone and ear phone located in the ear piece housing.

10. An audio headset according to claim 9 including a filter circuit coupled across the second and third terminals of the transistor for filtering out low audio frequencies from the transmit signals, the filter including an inductor and a capacitor coupled in series across the second and third terminals.

11. An audio headset according to claim 1 [wherein the microphone comprises an electret] including a filter circuit that filters out low frequencies associated with bone conduction from the electrical transmit signals.

Cancel claim 12.

13. A method for operating a full duplex headset, comprising:
adapting a first ear piece for inserting into a first ear and receiving audio signals from a voice of a user while located within [a] the first ear of the user providing an audio talk source for the user;

converting the received audio signals from the first ear piece into transmit signals for outputting through a first connector as an audio output signal;

adapting a second ear piece for inserting into a first ear and receiving receive signals through a second connector while located within [a] the second ear of the user providing an audio listening source for the user;

adapting a headband to hold the first and second ear pieces in the first and second ear;
and

outputting the receive signals through a transducer in the second ear piece into the second ear of the user.

14. A method according to claim 13 including [surrounding a foam, paper, plastic, wood, or fiber material about the] suspending a microphone inside the earpiece with a foam material to acoustically isolate [a] the microphone in the first ear piece from audio signals attributed to bone conduction.

15. A method according to claim [13] 14 including [using a piezoelectric transducer in the first ear piece for generating the electrical transmit signals] using an electronic filter to further filter audio signal attributed to bone conduction.